

MISSOURI WATERFOWL STATUS, 2009



August 2009

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EXECUTIVE SUMMARY

2008-09 Hunting Season: In spite of pre-season concerns about habitat conditions due to late summer floods, dry conditions in southeast Missouri, potentially limited pumping capabilities in the Missouri River floodplain, and poor conditions on the breeding grounds, the 2008-09 season turned out better than expected. Favorable hunting weather, ample water, and a late corn harvest contributed to a near record duck harvest, the highest Canada goose harvest in the last 20 years, and a record snow goose harvest.

2008-09 Duck Harvest: Numbers of hunters participating in the 2008-09 duck season (40,000 vs. the 2001-05 average of 35,900), trips per hunter (8.0 vs. 2001-05 average of 8.2), and average daily success (1.9 vs. 2001-05 average of 1.4) combined to result in a 2008-09 duck harvest of 612,900 (448,400 USFWS estimate), compared to the record harvest of 627,300 (414,200 USFWS estimate) in 2007-08. Only a small portion of the statewide harvest takes place on Department areas. This was especially true during 2008-09, when just 12.7% of the statewide harvest occurred on Department areas.

2008-09 Canada Goose Harvest: As a result of changes to federal frameworks, Missouri was allowed to offer more Canada goose hunting opportunity beginning in 2006, especially during the periods when migrant Canada geese are likely to be present. Now Missouri goose hunters have the opportunity to hunt 62 days in December and January, compared to 40 days under the previous framework. During 2008-09, more individuals (17,000) hunted Canada geese than in 2007-08 (15,200) and they harvested 85,900 Canada geese, a record number (1990-2007).

2008-09 Light Goose Harvest: During 2008-09 regular season and Conservation Order, snow goose hunters harvested a record 222,900 light geese (preliminary estimate). Eight thousand five hundred hunters participated in the 2009 Conservation Order compared to 6,443 in 2008.

2009 Breeding Duck Habitat: Numbers of wetlands termed “May ponds” reflect habitat conditions for breeding ducks. The number of May ponds recorded during spring 2009 totaled 6.8 million, an increase of 45% from the previous year’s estimate of 4.4 million. The estimate of ponds in Prairie Canada was 3.6 million, a 17% increase from the 2008 estimate of 3.1 million. The most significant improvement in wetland conditions occurred in the north-central U.S. In contrast to drought conditions that prevailed during spring 2008, several precipitation events during summer of 2008 and above average snow and precipitation during fall and winter resulted in a 108 % increase in May Ponds from 1.4 during 2008 to 2.9 million during 2009. This is similar to numbers of May ponds recorded in the north-central U.S. during 1999.

2009 Breeding Duck Populations: The total duck population estimate in the traditional survey area increased from 37.3 million during 2008 to 42 million during 2009, an increase of 13%. The 2009 estimate is 25% above the long-term average (1955-2007). Mallard abundance in the traditional survey area (8.5 million) represented a 10% increase from the 2008 estimate of 7.7 million and was 13% above the long-term average. Gadwall (+12%), wigeon (-1%), blue-winged teal (+11%), green-winged teal (+16%) and redheads (-1%) were statistically similar to 2008. Northern pintails increased by 23% from 2008 but remain 20% below their long-term average. Scaup numbers were similar to 2008, but remain 18% below their long-term average. The estimate of 1.0 million redheads was similar to 2008 and 62% above their long-term average.

Canada Goose Status: Canada geese that migrate to Missouri include birds from 4 different populations - Tallgrass Prairie Population, Mississippi Valley Population, Eastern Prairie Population, and the giant Canada goose population. The Tallgrass Prairie Population is now identified by the AOU as a component of the cackling goose species instead of Canada geese. Geese from these different populations experience different breeding conditions each year and survive, reproduce, and are harvested at different

rates. As a result, population-specific information is needed to assess annual status and to develop appropriate regulations recommendations.

Eastern Prairie Population: The Eastern Prairie Population (EPP) of Canada geese is the predominant “subarctic” migrant population represented in the Missouri goose harvest. EPP geese breed primarily in northern Manitoba, along the west coast of Hudson Bay. This region experienced one of the latest springs in the last 40 years. Measures of productivity from the Nestor One study site indicate a likely bust in production. While the overall EPP population estimate of $279,900 \pm 31,200$ was similar to the previous two years, the population consisted of fewer productive geese. Productive geese declined from the record estimate of $89,400 \pm 12,600$ in 2007 to $67,900 \pm 9,800$ in 2008, and then further declined to $54,100 \pm 9,800$ in 2009, similar to the estimate of $48,000 \pm 7,900$ in 2004, the previous year with very low production. The fall flight for EPP geese is expected to be lower than in 2008, with a lower proportion of young.

Mississippi Valley Population: Late spring conditions affected nesting activity for MVP geese as it did with other goose populations in the Hudson Bay region. The 2009 total population estimate for Mississippi Valley Population (MVP) Canada geese was 581,200, 21% below the 2008 estimate of 626,400 and three percent below the 1989-2008 average. The estimate of 239,600 breeding adults was 35% below the 1989-2008 average and is the lowest ever recorded. Few young are expected to be present in the fall flight this year.

Tallgrass Prairie Population: Because the Tallgrass Prairie Population nest in the high arctic, production is often affected by weather and late snow melt. Summer field crews have not yet arrived on Baffin Island as of late July, but limited information suggests that spring breakup during 2008 was near average. Based upon this limited information, the fall flight may be similar to recent years.

Giant Canada Geese: The Mississippi Flyway 2009 spring estimate of 1.9 million giant Canada geese is similar to the 2008 estimate of 1.7 million. The Missouri 2009 estimate of 52,400 was similar to the last several years. The population estimate for Missouri increased from 30,300 during 1993 to a high of 77,100 during 2000. Control activities and harvest regulations focusing on giant Canada geese appear to be working with relatively stable populations since 2000. Production during spring 2009 appears to have been at least average in spite of periods of flooding and cold temperatures during the breeding period.

White-Fronted Geese: White-fronted geese nest across a broad region from Alaska to the eastern Arctic and are not surveyed in the spring like other waterfowl species. Instead, a survey is conducted each fall on their staging areas in Prairie Canada. The 2008 fall survey resulted in a new 3-year (2006-2008) average of 679,300 which is 6% above the previous mean of 639,400. Nesting activities were delayed in the central Arctic and production there is expected to be below average in 2009. However, production is expected to be average to above average in the western portion of their range. Overall, the fall flight of white-fronted geese is expected to be near average during 2009.

Light Geese: The 2008-09 Midwinter Waterfowl Survey resulted in an estimate of 2.75 million Mid-Continent Population (MCP) light geese, which is 12% more than the previous year. After peaking at nearly 3 million in 1998, numbers of the MCP light geese have been variable, but generally stable. Based upon limited information, overall production of light geese is expected to be below average in 2009 and include a lower proportion of young in the fall flight compared to 2008.

2009-10 Waterfowl Season Frameworks: Broad frameworks of waterfowl hunting dates, season lengths, and bag limits are developed by the U.S. Fish and Wildlife Service in cooperation with states from each of the 4 flyways – Atlantic, Mississippi (including Missouri), Central, and Pacific. The result

of this regulations process is a general waterfowl season framework within which states select specific season dates. All states within each flyway share a common framework of season lengths and bag limits; thus, Missouri's basic season structure is the same as the states from Minnesota in the North to Louisiana in the South. States can recommend a season more restrictive but no more liberal than the federal framework.

Adaptive Harvest Management: Duck seasons are based on regulatory alternatives developed under the Adaptive Harvest Management Program (AHM). Each year's regulation recommendations under AHM are based on the status of the mallard breeding population and the condition of prairie ponds in Canada. A 3-tiered package of open seasons includes liberal (60 days), moderate (45 days), and restrictive (30 days), options. For the 13th consecutive year, AHM calls for a 60-day season with a 6-duck daily bag limit in 2009-10.

Canvasbacks: Canvasbacks are among the least abundant of the "major" duck species. Because of their historically low numbers, canvasback regulations have been conservative. The harvest management strategy is to maintain a spring breeding population of at least 500,000 canvasbacks. The spring 2009 population estimate of 662,000 will support a full 60-day season with a 1-bird daily bag limit in the Mississippi Flyway.

Pintails: The 2009 population estimate of 3.2 million is 23% higher than the 2008 estimate, but still is 20% below the long-term average. Modeling suggests a fall flight estimate of 5.13 million pintails. The population will support a full 60-day season with a 1-bird bag limit in the Mississippi Flyway.

Scaup: Scaup have not recovered from a long-term decline. The 2009 breeding population estimate increased from 3.74 million during 2008 to 4.2 million during 2009 (+12%). Although this estimate is not statistically different from 2008, under the U.S. Fish and Wildlife Service scaup harvest strategy, a moderate scaup season will be offered during 2009. The moderate package allows for a 2-bird bag for the entire season. Regardless, concern for the status of scaup remains as the 2009 population estimate is still 18% below the long-term average.

Canada Goose Season Framework: Changes in the Canada goose season framework first implemented in 2006 to provide more hunting opportunity and to evaluate the potential impacts of higher harvests on migrant vs. resident Canada goose stocks will continue during 2009. A season length of 79 days with no limit on the number of days allowed after November will be sufficient to allow an early segment targeting local giant Canada geese plus opportunity for late season Canada goose hunting when migrants are most prevalent. The first segment of at least 9 days prior to 16 October includes a bag limit of three, and during the remainder of the season, a bag limit of two. In the past, poor production of EPP geese would have triggered more restrictive Canada goose hunting regulations in Missouri and other EPP states. However, under the current framework no changes are warranted. This means goose hunters will have 62 days of late season opportunity in December and January along with a 2-bird bag limit. In 2004, the last year with a bust in production, the Missouri goose season included only 40 days in December and January and a 1-bird daily bag limit.

White-fronted Goose Harvest Management: More liberal white-fronted goose regulations implemented since 1999, and increased incidental harvest of white-fronted geese associated with longer duck seasons since 1997, are thought to have contributed to a decline in numbers of white-fronted geese by 2003. The federal framework now calls for a season that may either be 72 days with a 2-bird bag limit, or 86 days with a 1-bird bag limit. Mid-Continent Population (MCP) white-fronted geese are managed under cooperative agreements between the Central, Mississippi, and Pacific Flyways.

Spring 2010 Conservation Order: A light goose Conservation Order will be in effect for the 12th consecutive year. The Conservation Order will be in effect from February 1-April 30, 2010. Lesser snow (white and blue color phase) and Ross's geese may be taken with the use of electronic calls, unplugged shotguns, and shooting until ½ hour after sunset. A Conservation Order Permit is the only permit needed for residents and nonresidents during the Conservation Order. An exception to the above permit requirement is persons 15 years of age and younger, provided either 1) s/he is in the immediate presence of a properly licensed adult (must possess a Conservation Order Permit) who is eighteen (18) years of age or older and has in his/her possession a valid hunter education certificate card, or was born before January 1, 1967 or 2) s/he possesses a valid hunter education certificate card. A federal duck stamp is not required and there is no limit during the Conservation Order.

Youth Waterfowl Hunting Days: Youth hunting days incorporate a weekend or holidays up to 14 days before or after the regular season. The bag limit is the same as during the regular season. Youth must be accompanied by an adult who is not allowed to hunt ducks but who can participate in other open seasons (e.g., geese). Only ducks were allowed during 1996-1997; however, geese also could be taken by youth hunters beginning in 1998; the same holds true for 2009.

Rationale for Missouri Waterfowl Seasons: Information for recommending specific waterfowl seasons for Missouri includes migration timing, weather, habitat conditions, and hunters' preferences. Unfortunately, it is impossible to predict in August what these conditions will look like in November-January. Based on hunters' desires for later seasons, Missouri moved the opening date back about week in each zone beginning in 2004. Since then, the duck season has opened on the last Saturday in October in the North Zone, the first Saturday in November in the Middle Zone, and on Thanksgiving or the Friday thereafter in the South Zone. This season structure provides a potential range of opening dates from October 25 through October 31 in the North Zone, November 1 through November 7 in the Middle Zone, and November 22-28 in the South Zone. Maintaining opening dates associated with specific weeks of the month allows the timing of duck season to vary by seven days within a six-year period and accommodates those with earlier or later preferences over this period of time.

Hunters' Views about Duck Season Dates: We continue to solicit hunter input on preferred season timing by including questions on the Annual Waterfowl Post-Season Harvest Survey and a more in-depth survey administered approximately every five years. All hunter preferences are legitimate; however, varied attitudes about the "best" season are not necessarily shared by all hunters even in a local area. Species preferences (mallards vs. other dabblers), habitat types (shallow, managed sites vs. reservoirs and rivers), and weather conditions (mild vs. severe) are just some of the factors that contribute to differences in views about preferred season timing. As a result, waterfowl season dates always are points of contention. Duck hunters have responded favorably to later seasons first implemented in 2004. During the past three years, the percentage of duck hunters dissatisfied with season dates has ranged from 18% to 22% in the North Zone and from 20% to 22% in the Middle Zone. The percentage of hunters dissatisfied with season dates in the South Zone gradually increased from 17% after the 2005 season to 32% after the 2007 season. The growing dissatisfaction among South Zone hunters coincided with progressively earlier seasons due to the timing of the Thanksgiving holiday weekend. In 2008, Thanksgiving weekend was about a week later than in 2007 and accommodated those hunters wanting a later season than those offered in the recent past. The percentage of South Zone hunters dissatisfied with season dates declined from 32% after 2007 to 23% after the 2008 season.

Hunters' Views about Canada Goose Season Dates: Preferences among Canada goose hunters have shifted dramatically since the 1980s. Growing numbers of giant Canada geese, delays in migration of the EPP, and a wider distribution of geese in Missouri have contributed to these changes. Traditionally, hunters indicated a desire for concurrent duck and goose openers (73% in 1988 and 63% in 1996), but by 2002, this became less important with only 48% wanting concurrent openers, while 72% indicated it was

important to have goose season open as late as possible. This change in preferences coincided with a transition to the later arrival of migrant Canada geese. In a 2008 survey, goose hunters were nearly evenly divided in their preferences for having the early Canada goose season open in early October, concurrent with the duck opener, or in Mid-November before the regular goose season.

Outlook for the 2009-10 Season: Expectations for the 2009-10 waterfowl season in Missouri will undoubtedly be high. Increased numbers of breeding ducks and above average production of young in the fall flight have set the stage for a potentially good duck season. The degree to which this potential is realized in Missouri is dependent upon weather and local habitat conditions. Currently, habitat conditions in Missouri appear to be favorable in most areas. Spring crop planting was delayed in some regions, but yields are not expected to be significantly affected. Production of moist soil vegetation appears to be average to above average in most regions. Barring major late summer flooding, habitat conditions appear to be relatively good going into fall. Timely rainfall will be needed to ensure availability of wetland food to ducks. Poor production on northern goose breeding areas will result in a low proportion of young in migrant goose populations (snow geese, interior Canada geese, and white-fronted geese) but this will be offset by average to above average production of giant Canada geese. Snow and ice cover in states north of Missouri will determine to a large extent the degree to which Canada geese will arrive in Missouri. Hunters will once again have the opportunity to take advantage of a 16-day teal season, a 60-day duck season, late season Canada goose hunting, and the Light Goose Conservation Order.

INTRODUCTION

Wetland conditions and waterfowl populations have gone from record low to record high levels during the last two decades. In recent years, hunting opportunity and harvest have “raised the bar” of hunter expectations. Following is a summary of last year’s waterfowl season and the outlook for 2009. The report is divided into 6 primary sections:

- 1) a review of the 2008-09 hunting season,
- 2) the status of duck habitat and populations in 2009,
- 3) the status of goose populations and production in 2009,
- 4) issues affecting hunting regulations in 2009-10,
- 5) factors considered when recommending hunting seasons for Missouri, and
- 6) the outlook for the 2009-10 season.

A more complete summary of waterfowl status is available at:

<http://migratorybirds.fws.gov/reports/reports.html>

The Missouri waterfowl status report is available on the Missouri Department of Conservation website at:

<http://www.mdc.mo.gov/hunt/wtrfowl>

Throughout the fall / winter this website provides up-to-date migration and hunting status in Missouri as well as other waterfowl hunting formation.

We thank the U.S. Fish and Wildlife Service, the Canadian Wildlife Service, other State and Provincial conservation agencies, Missouri Department of Conservation wetland area managers, and Missouri hunters for information used in this report.

2009-10 HUNTING SEASONS IN REVIEW

Waterfowl hunting opportunity in Missouri began with the statewide teal (9/12-9/27) and Canada goose (9/26-10/7) seasons followed by the youth waterfowl hunting weekends, the opening of the North, Middle, and South Zone duck seasons and late season goose hunting. Missouri duck seasons have been 60 days long since 1997, with bag limits the same as allowed in the federal framework. Duck season timing has been later in the North and Middle zones than in most recent years.

The 2009 Missouri Canada goose season was 79 days in length with an early segment of 12 days and a late segment of 67 days, beginning the weekend before Thanksgiving. The daily bag limit was three birds during the early segment and two during the late segment.

Table 1. 2009-10 waterfowl seasons.

Zone	Youth Hunt	Ducks	Canada Geese & Brant	White- fronted Geese	Light Geese (snow, blue, Ross's)*
NORTH	10/24-10/25	10/31-12/29	9/26-10/7 11/26-1/31	11/26-1/31	10/26-1/31
MIDDLE	10/31-11/1	11/7-1/5			
SOUTH	11/21-11/22	11/26-1/24			
*The Conservation Order for light geese will be in effect from February-April 30 with no bag limit. Hunters may use electronic calls & unplugged shotguns, & shoot from ½ hour before sunrise to ½ hour after sunset. New: A Conservation Order Permit is required for residents & nonresidents during this time.					

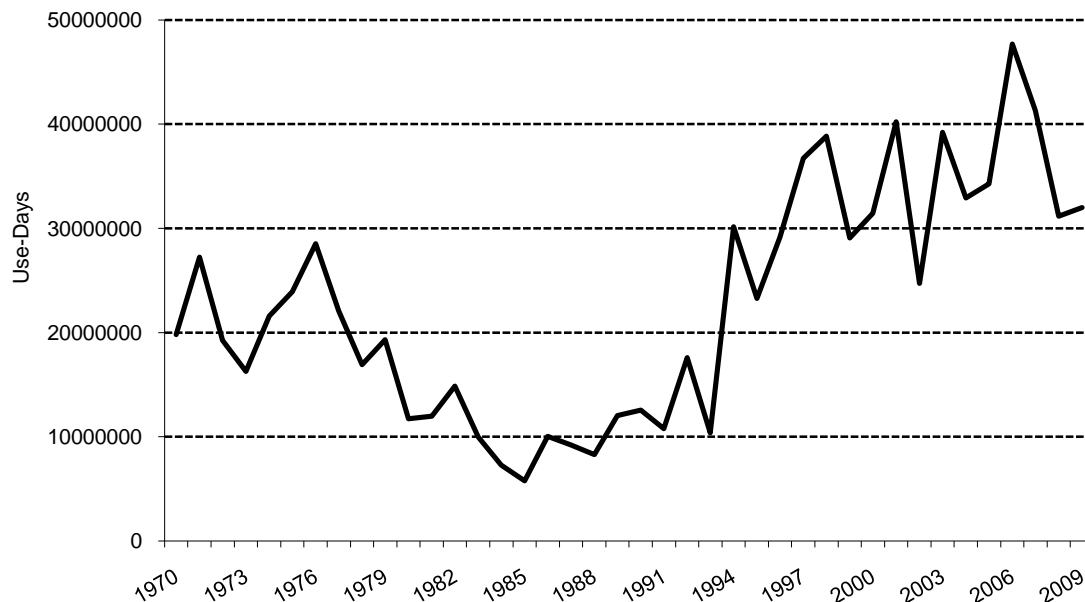
Weather, Habitat and Migrations:

Fall and Winter Habitat:

Late summer and early fall (July-October) were the coolest on record. The wet conditions of 2008 persisted into 2009, and together these two years represented the wettest two consecutive years on record. The cool, wet weather made for ideal growing conditions for moist-soil plants. Habitat conditions looked ideal going into the 2009 waterfowl season.

Cool temperatures and above average precipitation characterized October 2009 in Missouri and much of the Midwest. In Missouri, October 2009 was the second wettest on record and the coolest in more than 30 years. Regionally, northwestern counties reported 4-7 inches of precipitation, while several east-central and southeastern counties reported more than 12 inches. In contrast to October, November was the 7th warmest on record in Missouri. It was the 5th warmest for the Midwest. The mild conditions of November came to an abrupt end in early December when cold temperatures moved into the state from December 3-9. A snow storm moved through the northern Midwest on December 3 and began to freeze wetlands in north

Figure 1. Duck Use-days on State and Federal Wetland Areas in Missouri, 1970-2009.



Missouri. Another system moved through Missouri on December 8-9. It brought heavy snow, ice and 35 mile/hour wind gusts through northwest and north-central Missouri. Snowfall accumulations of 8 to 12 inches were common. Wetlands in the northern half of the state froze and remained ice-covered through the remainder of the duck season. Another storm moved through around Christmas and froze most remaining open shallow water throughout the state. December was the 28th coldest and 25th wettest on record (1895-2009). Cold temperatures continued through the first two weeks of January and even Truman Reservoir, Smithville Reservoir, and Lake of the Ozarks were mainly ice covered by the first week in January. Habitats were able to thaw through much of Missouri in late January as a result of above average temperatures and rain. Overall, January was the 19th coldest and 67th wettest on record (1895-2010) in Missouri.

Waterfowl Migrations:

The first significant migration of pintail and green-winged teal occurred on October 9-10 when temperatures dropped into the teens in Prairie Canada. Observers noted the arrival of the first snow geese and white-fronted geese on October 19 and a significant diver migration on October 31. The mild conditions in November resulted in a very gradual influx of waterfowl. A few managers noted a migration event on November 6-7 and others observed migrating snow geese on November 14-16. Mallards arrived in greater numbers when cold fronts moved through around Thanksgiving (Nov. 24- 26 and Nov. 29-Dec.1). In December, mallards were also picked up before (Dec. 4th and 5th) and after (8th and 9th) the first significant winter storms of the season. Southern areas also picked up ducks (Dec. 10th and 11th) as shallow water habitats became inaccessible further north. Most ducks departed Missouri with the onset of ice in mid-December and the first significant numbers of migrant Canada geese arrived at this time. By the time of the Midwinter Survey, only the Missouri Bootheel retained significant numbers of ducks. The statewide Midwinter Survey (Jan. 4-9) estimate of 148,200 ducks was one of the lowest in 20 years (85,700 – 714,000). In contrast, the Midwinter Survey estimate of 230,000 Canada geese

was one of the highest estimates in recent years. During the third week of January, pintail, wigeon, green-winged teal, and white-fronted geese filtered back into Missouri as habitats thawed during the third week of January.

Ideally we would like to track the total number of ducks that use Missouri's wetlands each fall. However, with large movements of ducks in and out of Missouri, it is not possible to determine how many ducks in a count include the same ducks from the previous count versus new ducks that may have arrived and replaced ducks that had recently departed. As a result, biologists calculate duck use-days to track duck abundance. Duck use-days are calculated by multiplying the number of ducks counted by the number of days they were present. For example, 10 ducks present for 10 days would equal 100 duck use-days. Similarly, 50 ducks present for two days would also equal 100 duck use-days.

After reaching a peak of 47.7 million duck use-days during fall 2006, duck-use days have declined each of the last three years (Figure 1). The 2009-10 estimates of 32.0 million duck use-days was slightly below the average of 35.4 million duck use-days from 1997-2008, the most recent years with 60-day duck seasons. The lower number of statewide duck-use days in 2009 can be partially attributed to the early December freeze-up in the North Zone and a subsequent 24% decline in duck-use days in that zone compared to the previous five years. The Middle Zone had a similar number of duck-use days compared to the previous five-year average (11.6 million vs. 10.9 million) and the South Zone, 13% fewer duck-use days (2.1 million vs. 2.4 million duck use-days). On average, the North Zone accounted for 55% of the statewide duck use-days from 2004 through 2008.

Duck Harvest:

Estimates of duck harvest are based on two sources, the U.S. Fish and Wildlife Service (USFWS) National Waterfowl Harvest Survey and the Missouri Department of Conservation Waterfowl Post-Season Harvest Survey. Typically, USFWS estimates and MDC's post-season harvest estimates are similar (see Appendix A), and in the past we only reported the USFWS estimates. Beginning in 2002, the U.S. Fish and Wildlife Service implemented a new survey methodology and their preliminary estimates vary somewhat from MDC's post-season survey estimates, so in Table 2 we now report both estimates.

Duck harvest declined 18% from 2008 (Table 2). However, the MDC estimate of 502,000 was still within the range experienced during the past 13 years of liberal seasons (378,100 – 627,300) and near the previous five-year average of 526,600 ducks. Missouri duck hunters have harvested more ducks in recent years. To illustrate, the average harvest over the last five years (547,800) is 31% higher than the average harvest during the first five years of liberal seasons (417,200). Furthermore, each of the last four years has produced harvest estimates higher than any previous year over the last 30 years.

Table 2. Missouri duck harvest (USFWS and MDC harvest survey data).*

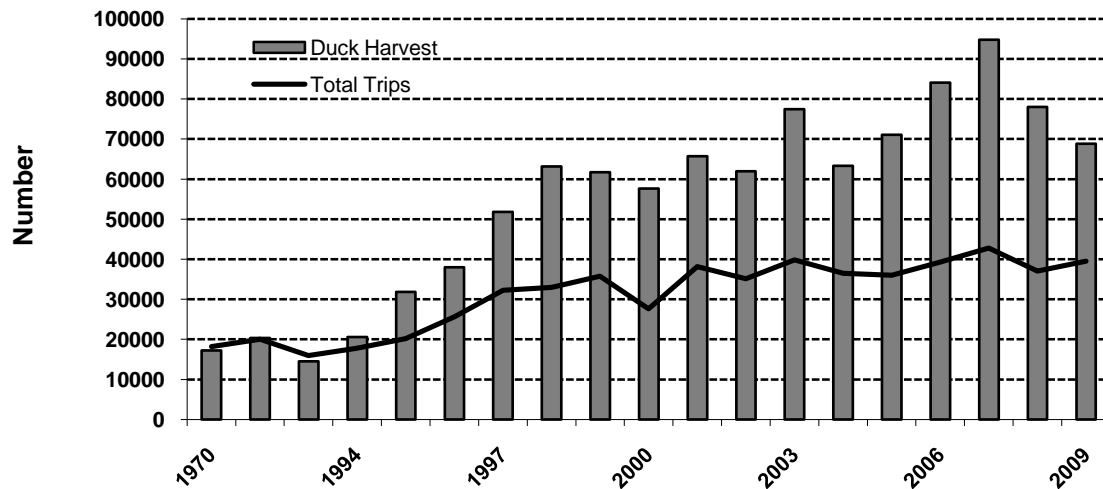
Year	North Zone *	Middle Zone	South Zone	USFWS Estimate	MDC estimate
1981-84	122,200 (52.5%)	96,500 (41.5%)	13,900 (6.0%)	232,600	
1985-87	86,200 (49.3%)	82,400 (47.1%)	6,400 (3.6%)	175,000	
1988-93	55,900 (53.5%)	43,000 (41.2%)	5,500 (5.3%)	104,400	
1994-96	109,900 (55.7%)	74,800 (37.9%)	12,500 (6.3%)	197,200	
1997	186,800 (51.0%)	142,200 (38.8%)	37,200 (10.2%)	370,400	378,100
1998	239,600 (52.3%)	167,100 (36.5%)	51,700 (11.3%)	469,900	414,900
1999	200,700 (62.2%)	79,700 (24.7%)	42,200 (13.1%)	348,200	400,100
2000	256,500 (56.8%)	98,600 (21.9%)	95,700 (21.2%)	404,000	446,800
2001	277,100 (60.1%)	114,500 (24.8%)	69,500 (15.1%)	513,000	445,900
2002	74,700 (34.4%)	129,500 (59.6%)	13,100 (6.0%)	208,000	392,600
2003	156,600 (37.1%)	236,800 (56.2%)	28,100 (6.7%)	433,700**	472,000
2004	133,700 (41.7%)	154,500 (48.2%)	32,600 (10.2%)	322,700**	396,000
2005	146,600 (32.9%)	255,700 (57.4%)	43,600 (9.8%)	447,700**	426,100
2006	158,100 (41.4%)	188,800 (49.5%)	34,600 (9.1%)	383,500**	570,600
2007	204,500 (50.6%)	183,700 (45.5%)	15,700 (3.9%)	414,227**	627,298
2008	194,200 (45.1%)	210,600 (48.9%)	25,600 (5.9%)	448,418**	612,949
2009	NA	NA	NA	398,700**	502,013

* Three zones since 1991. Zone totals will not equal statewide total. The zone estimates are based on weights that include early season teal harvest. The statewide total excludes early season teal harvest.

** Data are preliminary.

Even though hunters took 7% more trips on Department Areas in 2009 (39,500 trips) compared to 2008 (37,000 trips), they harvested 12% fewer ducks (68,800 in 2009 compared to 78,000 in 2008, Figure 2). The average of 1.74 ducks per trip was lower than the previous five-year average of 2.04 birds per trip. Only a small portion of the statewide harvest takes place on Department Areas. From 1988-1997, hunters on Department Areas accounted for an average of 14.4% of the statewide duck harvest (range = 12.4-16.5%). During dry years, Department Areas with water pumping capabilities typically harvest a higher proportion of statewide total than during wet years. For example, in 1999-00, a dry season, 19.1% of the harvest occurred on public areas compared to 13.9% during the wet fall of 1998-99. Timing of crop harvest may also influence duck harvest distribution. In 2008, corn harvest was delayed and duck hunters reported spending more time hunting crop fields and irrigation lakes as more ducks were field feeding. Only 12.7% of the statewide harvest occurred on Department Areas during 2008-09. In 2009-10, this percentage rose slightly to 13.7%.

Figure 2. Numbers of ducks harvested and trips taken on Missouri Department of Conservation areas.



Canada Goose Harvest:

Missouri participated in a three-year experiment (2006-2008) to test the hypothesis that giant Canada goose harvest will buffer EPP Canada goose harvest. In this experiment, Missouri offered more Canada goose hunting opportunities, especially during the periods when migrant Canada geese were likely to be present. Prior to 2006, Missouri could only have 40 days of its Canada goose season during December and January in the North and Middle Zones. Beginning in 2006, Missouri could allow 62 days of Canada goose hunting December and January. The experiment that began in 2006 was extended through 2009 to see how these regulatory changes would affect EPP Canada geese during a year when they experienced a bust in production. In 2004, the previous year with a bust in production, Missouri's goose hunting regulations were 50% more restrictive than they were in 2009 and included a 1-bird bag limit during the late season. During the 2009 season, 15,900 goose hunters harvested a record 89,800 geese (1990-2007, Table 3). The number of Canada goose hunters in 2009 (15,900) was similar to 2008 (17,000), and 2007 (15,200).

Table 3. Missouri Canada goose harvest (USFWS and MDC harvest survey data).*

Years	Swan Lake Zone	Southeast Zone	North Zone	Middle Zone	South Zone	USFWS estimate	MDC estimate
1970-74	35,100 (81.0%)	1,900 (4.4%)	4,900 (11.3%)	900 (2.0%)	500 (1.2%)	43,300	
1975-79	52,700 (78.7%)	6,500 (9.7%)	4,200 (6.3%)	2,800 (4.2%)	700 (1.0%)	66,900	
1980-86	27,900 (71.4%)	2,400 (6.1%)	4,400 (11.3%)	4,100 (10.5%)	300 (0.8%)	39,100	
1987-89	18,000 (58.8%)	1800 (5.9%)	3,000 (9.8%)	5,800 (19.0%)	2,000 (6.5%)	30,600	
1990-92	11,100 (36.6%)	4,700 (15.5%)	7,600 (25.1%)	6,600 (21.8%)	300 (1.0%)	30,300	
1993-96	6,900 (15.0%)	7,200 (15.8%)	22,000 (48.3%)	8,500 (18.5%)	1,100 (2.4%)	45,700	
1998	300 (1.2%)	2,300 (9.3%)	13,800 (56.1%)	1,600 (6.5%)	6,600 (26.8%)	24,600	37,400
1999	700 (2.0%)	2,400 (6.8%)	21,200 (59.7%)	6,100 (17.2%)	5,100 (14.4%)	34,600	39,800
2000	1,700 (3.6%)	4,500 (9.6%)	26,800 (56.9%)	7,000 (14.9%)	7,100 (15.1%)	43,800	76,300
2001	3,100 (4.7%)	0	43,400 (64.3%)	16,000 (23.8%)	5,000 (7.3%)	64,900	43,900
2002	3,300 (13.1%)	274 (1%)	14,500 (57.6%)	4,900 (19.5%)	2,200 (8.7%)	23,500	44,000
2003	--	--	--	--	--	18,500**	56,400
2004	--	--	--	--	--	8,800**	39,500
2005		387 (1.0%)	24,000 (61.3%)	12,961 (33.2%)	1,741 (4.4%)	39,300**	51,800
2006			37,200 (53.2%)	30,000 (42.9%)	2,697 (3.9%)	70,400**	58,600
2007			Data not available	Data not available	Data not available	42,158**	63,467
2008						81,880**	85,934
2009			--	--	--	66,936**	89,800

*The Swan Lake Zone was eliminated in 2004 and a statewide goose season was established in 2006.

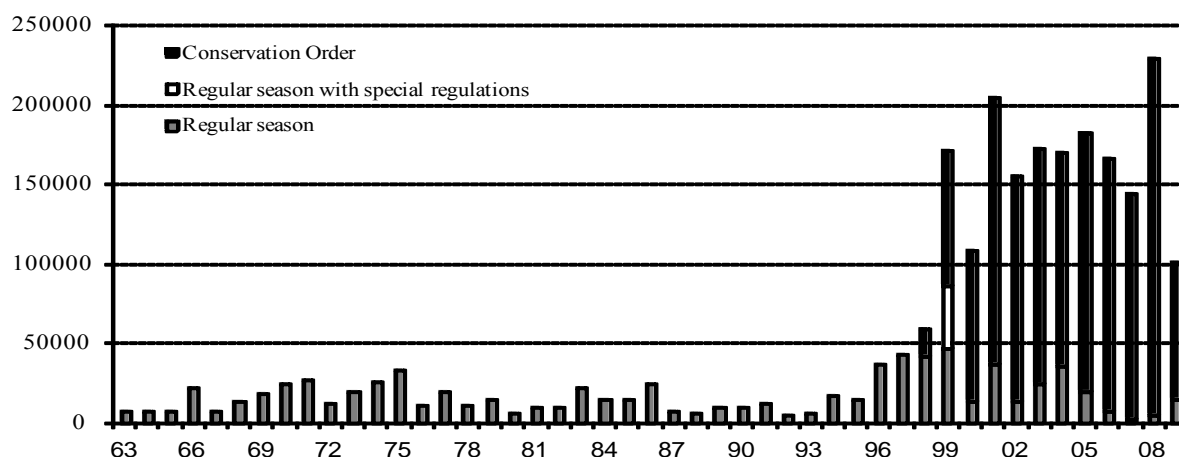
** Data are preliminary.

Light Goose Harvest:

More liberal light goose hunting regulations after the mid-1990s and the availability of a Conservation Order (CO) beginning in February 1999 have resulted in a dramatic increase in the harvest of light geese in Missouri. About 8,000 hunters participate annually in the CO in Missouri and average about 40,000 total days hunted. This is comparable to the total number of days hunted on MDC areas during the regular waterfowl season. The total light goose harvest in Missouri increased from an average of 16,535 during the 10 years prior to the CO (1988-1997

regular season) to an average annual harvest since 1998 of 160,900 (regular season plus CO), a nine-fold increase (Figure 3). In contrast to the record setting 2008-09 Conservation Order, when 8,500 snow goose hunters harvested 224,300 light geese, preliminary estimates from 2009-2010 suggest that 5,200 hunters harvested 86,500 light geese. Weather conditions that included more snow and ice than usual prevented light geese from staying at traditional locations for very long. Poor production during the past few years also resulted in a low proportion of young birds making it more difficult to decoy geese. A grand total of over 1.8 million light geese have been harvested in Missouri since the Conservation Order began.

Figure 3. Missouri light goose harvest: 1962-2009.



White-Fronted Goose Harvest:

The Mississippi Flyway white-fronted goose harvest more than doubled from an average of about 65,000 during the early 1990s to over 152,000 during 2006-08. Over 90% of this harvest typically occurs in Louisiana and Arkansas. In Missouri, the harvest of white-fronted geese is low and unpredictable with the majority of harvest occurring in southeast Missouri during late season. In the last 10 years, the harvest of white-fronted geese in Missouri has ranged from undetectable levels to more than 5,000 (1999). The 2009 white-fronted goose harvest in Missouri was estimated at 1,080.

Waterfowl Hunter Numbers:

The waterfowl management community is increasingly concerned about the challenges declining waterfowl hunters pose to maintaining the tradition of waterfowl hunting. Duck stamp sales provide some clues about long-term changes in duck and goose hunter numbers. Nationwide, the number of ducks stamps sold went from 2.4 million in 1971 to 1.35 million in 2008, a 44% decline (Table 4). The Mississippi Flyway experienced a 40% drop over this same period, and Missouri, a 29% decline. In Missouri, part of the decline in duck stamp sales can be attributed to a decline in goose hunter numbers as Eastern Prairie Population (EPP) Canada geese quit wintering at Swan Lake. Duck stamp buyers include duck hunters, goose hunters, stamp collectors, and supporters of waterfowl conservation.

Thus far, Missouri has avoided the decline in duck hunters experienced by many other states and by other types of hunting in Missouri. Based on a Department of Conservation survey conducted each year from 1979 to the present, duck hunter numbers in Missouri have actually remained fairly stable. According to this survey, duck hunter numbers in Missouri declined from 37,500 in 1979 to just over 20,000 during the late 1980s, a period of restrictive regulations and low duck numbers, and then rebounded to nearly 40,000 in recent years (Table 4).

Table 4. Trends in waterfowl hunting participation.

Season	Season Length	MO – Duck Hunters	MO – Duck Stamps	Miss Flyway Duck Stamps	U.S. Duck Stamps
61-63 Avg	30	NA	33,385	503,598	1,305,414
64-67 Avg	41	NA	42,052	718,207	1,709,257
68-69 Avg	30	NA	46,378	761,167	1,945,512
70-79 Avg	50	37,500 ¹	58,118	892,081	2,186,556
80-84 Avg	50	36,525	45,199	722,134	1,841,417
85-87 Avg	40	34,167	39,851	649,518	1,645,342
88-93 Avg	30	21,800	29,160	545,896	1,314,170
94-96 Avg	47	23,870	31,755	671,956	1,477,335
1997	60	31,104	39,472	752,280	1,648,353
1998	60	26,826	33,906	735,443	1,621,839
1999	60	31,283	38,725	746,682	1,639,053
2000	60	32,896	40,208	745,776	1,654,828
2001	60	38,002	40,353	734,300	1,641,421
2002	60	34,822	39,950	706,776	1,576,545
2003	60	37,079	39,851	695,242	1,562,145
2004	60	34,496	37,987	667,124	1,503,516
2005	60	35,101	36,447	625,376	1,446,391
2006	60	38,298	36,684	603,805	1,360,557
2007	60	38,792	38,160	602,641	1,373,514
2008	60	39,981	42,073	599,958	1,352,590
2009	60	38,656	NA	NA	NA

¹The estimate of duck hunters in Missouri only includes 1979.

2010 DUCK AND WETLAND STATUS

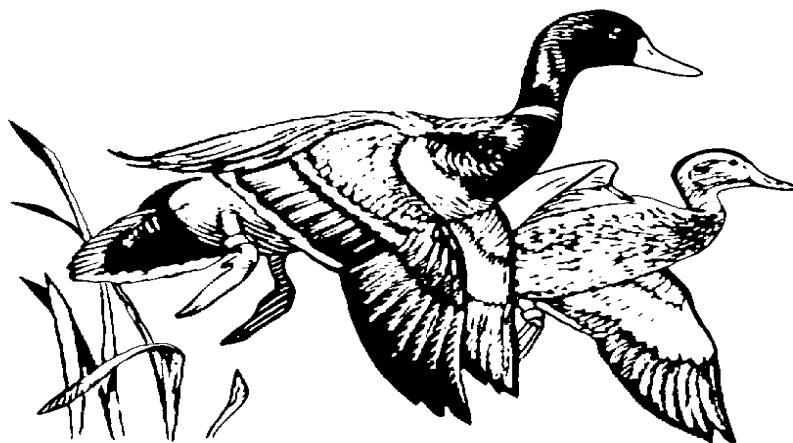
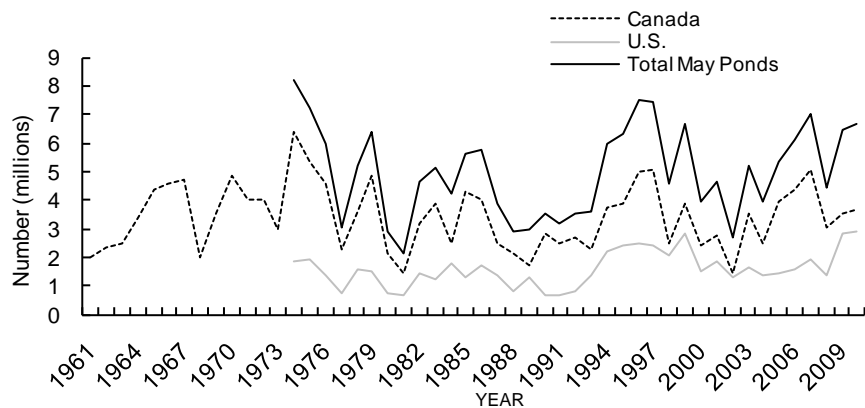
Each May and July, the U.S. Fish and Wildlife Service (USFWS) coordinates extensive surveys of waterfowl and wetlands in primary breeding areas of the U.S. and Canada.

2010 Breeding Duck Habitat:

2010 was characterized by average to below-average moisture, a mild winter, and early spring across the traditional and eastern survey areas. Numbers of wetlands termed “May ponds” reflect habitat conditions for breeding ducks. The 2010 estimate of 6.7 million May ponds was similar to the previous year’s estimate of 6.4 million (Figure 1). The estimate of ponds in Prairie Canada was 3.7 million, which was also

similar to the 2009 estimate of 3.6 million. The improved wetland conditions in north-central U.S. carried over from 2008 to 2009. In this region, the number of May ponds doubled from 1.4 million in 2008 to 2.9 million in 2009 and they remained at this level in 2010. Wetland conditions improved in Saskatchewan and Manitoba as a result of extensive rainfall after the survey and remained good in the Dakotas.

Figure 1. Number of May Ponds in the traditional survey areas of the U.S. and Canada.



Duck Populations:

The 2010 total duck population estimate of 40.9 million in the traditional survey area was similar to the estimate of 42.0 million in 2009, and 21% above the long-term average (1955-2009, Table 1). All regions in the traditional survey area experienced declines in breeding duck numbers ranging from 15-20% with the exception of the eastern Dakotas where duck numbers remained similar to 2009. Breeding duck numbers in the U.S. remain high with estimates 167% above the long-term average in the eastern Dakotas and 22% above the long-term average in the western Dakotas and Montana. Breeding duck numbers in Prairie Canada ranged from 38% below the long-term average in southern Ontario to 9% below the long-term average in southern Saskatchewan.

The estimate of 8.5 million mallards in the traditional survey area was the same as in 2009. This number represents a 10% increase from the 2008 estimate of 7.7 million and is 12% above the long-term average. Mallard numbers remain well above the long-term average in the U.S. and below the long-term average in Prairie Canada. Projections of the mallard fall flight are based on historic relationships among breeding duck numbers, habitat conditions, adult survival, and expected fall age ratios from the traditional survey area, Michigan, Minnesota, and Wisconsin. This year's fall flight prediction of 10.3 million birds was the same as in 2009.

In addition to mallards, green-winged teal (+78%), shovelers (+76%), gadwall (+67%), and redheads (+63%) were above the long-term averages. The blue-winged teal population was the only duck population to decline from 2009 (-14%), but their numbers still remained 36% above the long-term average. Although unchanged from 2009, pintail remain 13% below the long-term average and scaup were still 16% below the long-term average. Wigeon and canvasback populations are similar to the long-term average.

Table 1. Percent change in habitat and population indices from 2009 (09) and the long-term average (LTA) among breeding ground regions.

Region	<u>May Ponds</u>		<u>Breeding Ducks</u>		<u>Mallards</u>	
	vs. 09	vs. LTA	vs. 09	vs. LTA	vs. 09	vs. LTA
E. Dakotas	+28%	+129%	+02%	+167%	-04%	+162%
W.Dakotas/MT	-42%	+08%	-20%	+22%	+20%	+07%
S. Alberta	-01%	-08%	-20%	-38%	-21%	-45%
S. Saskatchewan	+21%	+34%	-15%	-09%	-9%	-18%
S. Manitoba	-43%	-43%	-20%	-28%	-16%	-08%

2010 GOOSE STATUS

Canada geese that migrate to Missouri include birds from 4 different populations (Figure 1). The Tallgrass Prairie Population is comprised of small geese that have recently undergone a name change and are now referred to as cackling geese by the American Ornithologists' Union. Cackling geese nest in the high arctic and are much smaller than Canada geese that nest in Missouri. Most cackling geese that migrate through Missouri nest on Baffin Island and winter in Louisiana, Oklahoma, Texas and northeastern Mexico. Eastern Prairie Population (EPP) Canada geese nest in northern Manitoba along the Hudson Bay coast and migrate/winter through Manitoba, Minnesota, Iowa, and Missouri. The Mississippi Valley Population (MVP) nest further east along the Hudson Bay coast and primarily migrate/winter through Ontario, Wisconsin, Michigan, Indiana, and Illinois. Small numbers are harvested in Missouri, especially along the eastern side of the state. Giant Canada geese nest in more temperate areas including Missouri. Geese from different populations survive, reproduce, and are harvested at different rates. The different populations are exposed to different breeding conditions each year. As a result, population-specific information is needed to assess annual status and to develop appropriate regulations recommendations.

Figure 1. Range of Canada goose populations.

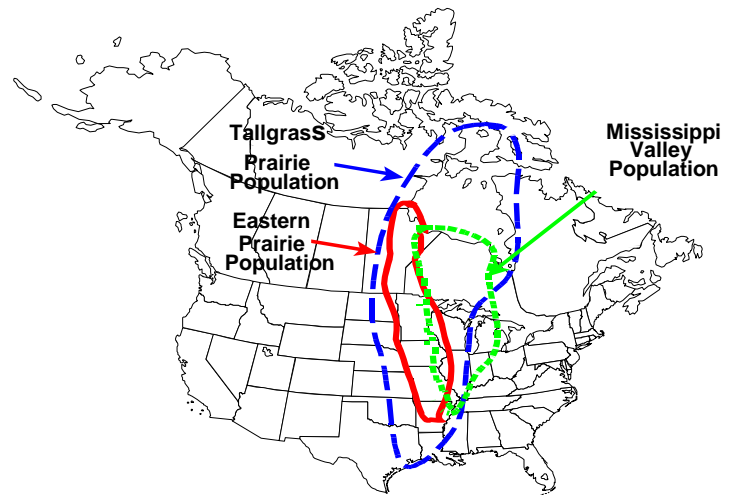
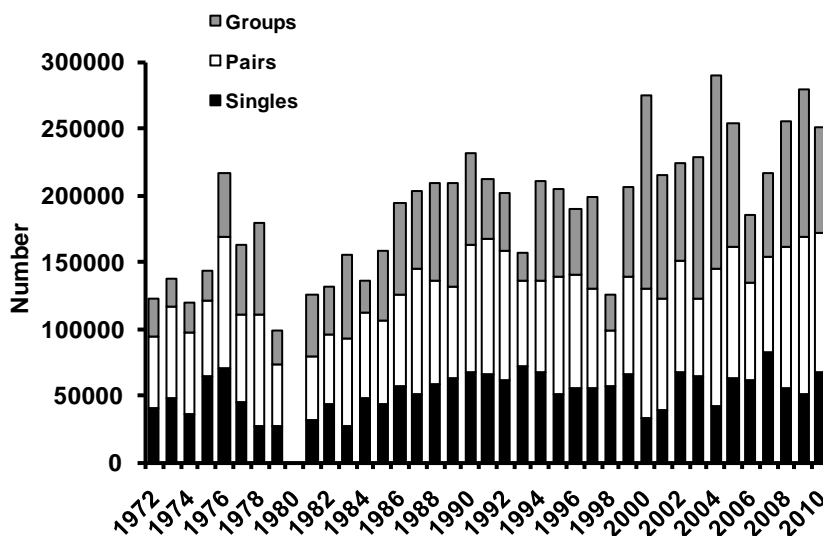


Figure 2. Numbers of EPP geese represented by singles, pairs, and groups.



Eastern Prairie Population:

The Eastern Prairie Population (EPP) of Canada geese is the predominant “subarctic” migrant population represented in the Missouri goose harvest. EPP geese breed primarily in northern Manitoba, along the west coast of Hudson Bay.

The timing of 2010 spring in the EPP Canada goose breeding range varied from early in the

south to late in the north. The southern portion of the EPP range was snow free and drier than normal at the time of the survey, while the northern portion remained snow and ice covered. As a result, nesting phenology varied by a month from north to south.

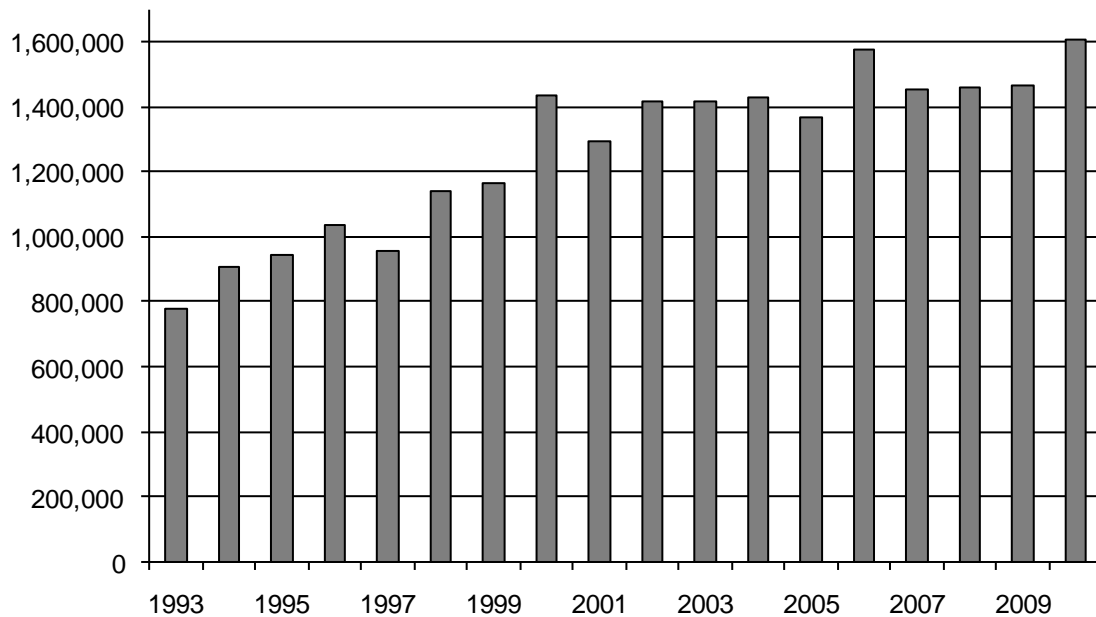
The 2010 EPP estimate of $251,300 \pm 73,600$ is similar to the 2009 estimate of $279,900 \pm 31,200$ geese and within the range of the previous 10 years (125,900 – 290,700, Figure 2). Due to the influence of molt migrants, EPP regulations are based on the estimate of geese represented by singles and pairs. The 2010 estimate of $172,600 \pm 25,000$ geese represented by singles and pairs is similar to the previous year’s estimate of $169,100 \pm 20,800$ geese. The 2010 estimate of $67,900 \pm 12,000$ geese represented by singles is higher than last year’s estimate of $50,400 \pm 9,800$ geese. This year’s estimate of $104,680 \pm 19,100$ geese represented by pairs is similar to the 2009 estimate of $118,800 \pm 17,000$. The estimate of geese in groups remained unchanged with estimates of $110,800 \pm 24,200$ and $78,700 \pm 70,100$ in 2009 and 2010, respectively. Improved conditions compared to the record late spring in 2009 likely contributed to an increase in productive geese from $54,100 \pm 9,800$ in 2009 to $80,000 \pm 13,500$ in 2010. Population dynamics differed in coastal versus interior habitats. While numbers of single geese and productive geese remained unchanged in the interior habitat; in coastal habitat, the estimate of singles increased from $27,400 \pm 5,600$ in 2009 to $42,400 \pm 8,500$ in 2010, and the estimate of productive geese rose from $30,200 \pm 6,200$ to $51,200 \pm 11,200$. Numbers of geese in groups declined from $56,400 \pm 17,400$ to $19,200 \pm 11,400$ in interior habitat but remained unchanged in coastal habitat.

In 2006, the population objective was lowered from 145,000 geese represented by pairs and singles to a two-year running average population of at least 75,000 geese represented by pairs and singles. The current two-year average estimate of 170,900 geese represented by singles and pairs is above this threshold.

Mississippi Flyway and Missouri Giant Canada Goose Populations:

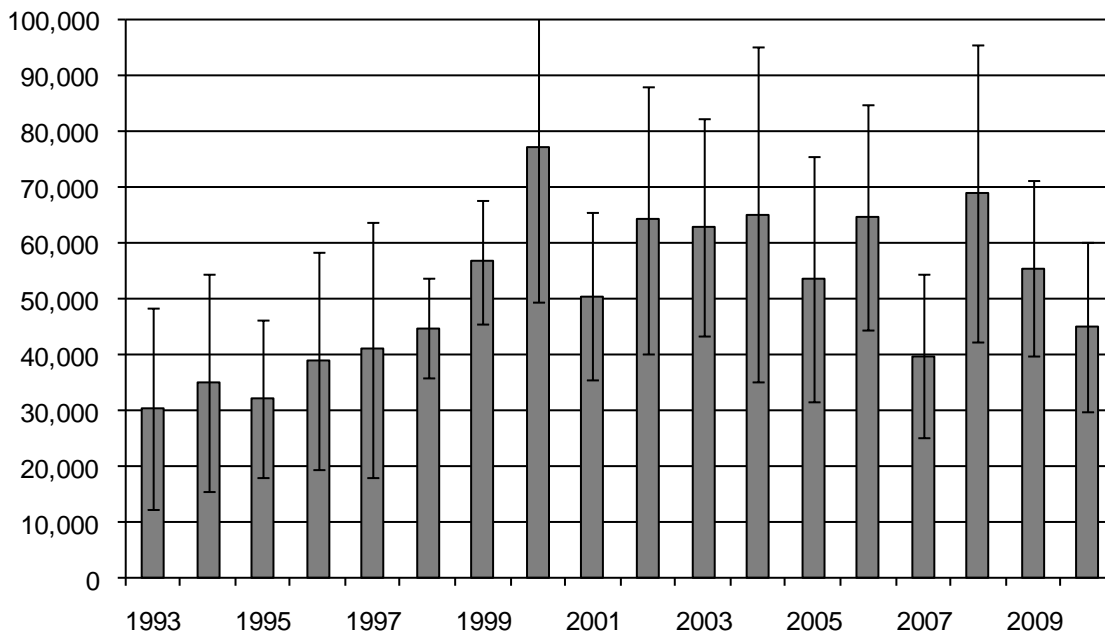
The giant Canada goose population in the Mississippi Flyway grew by 84% from 1993 to 2000 and reached over 1.4 million geese (Figure 3). Since that time, numbers have been much more stable and have fluctuated between 1.3 and 1.6 million geese. In 2010, the Mississippi Flyway estimate of 1.6 million was similar to the 2009 estimate of 1.5 million. Initial reports suggest average to above average production in the northern portion of the Mississippi Flyway and average to below average production in regions that experienced flooding in the southern Mississippi Flyway.

Figure 3. Mississippi Flyway spring population estimates of giant Canada geese.



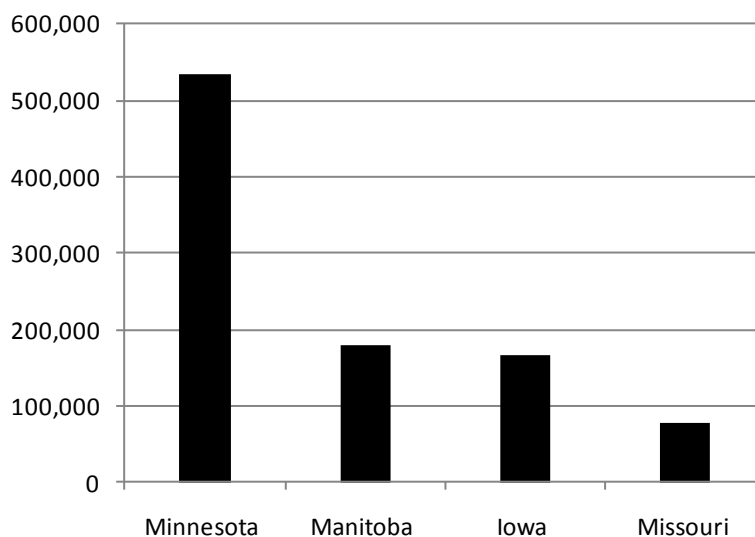
In Missouri, the giant Canada goose population has followed a trend similar to the Mississippi Flyway. In just seven years, the population has more than doubled going from 33,000 in 1993 to 77,100 in 2000 (Figure 4). After 2000, the breeding population estimate has remained stable or slightly declined with estimates ranging from a low of 39,900 in 2007 to a high of 69,000 in 2008. This year's estimate was 45,200. Keeping in mind the low levels of precision for the Missouri Spring Canada goose survey it appears the population may be down 41% from its peak in 2000 and 18% from last year. Production may be slightly below average due to extensive spring flooding.

Figure 4. Missouri spring population estimates of giant Canada geese.



Missouri goose hunters depend on migrant giant Canada geese from Minnesota, Manitoba, and Iowa. In fact, Missouri hunters shoot as many Minnesota giant Canada geese as Missouri giant Canada geese. Missouri contributes about 8% of the giant Canada geese included in the fall population from Manitoba, Minnesota, Iowa, and Missouri (Figure 5). The projected 2010 fall population from Minnesota is expected to be over 500,000. In Missouri, our fall population will likely be under 80,000.

Figure 5. Projected fall population of giant Canada geese from Minnesota, Manitoba, Iowa, and Missouri.



White-Fronted Geese:

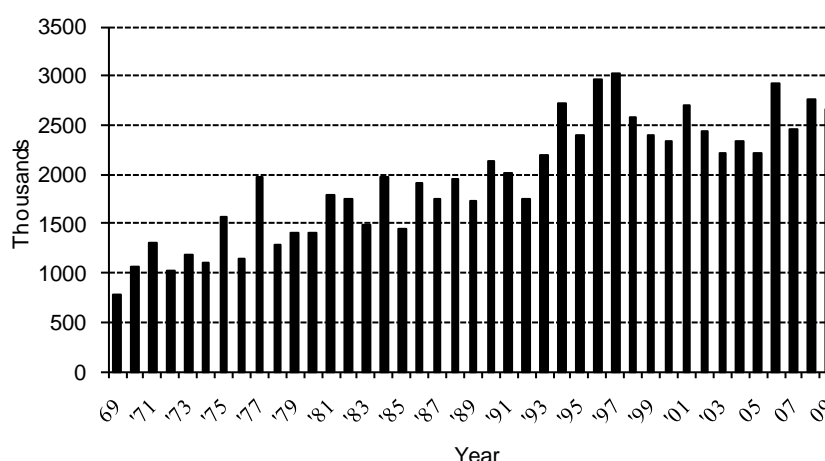
Mid-Continent Population (MCP) white-fronted geese nest across a broad region from Alaska to the eastern Arctic. In the eastern portion of their range, spring temperatures were slightly colder than average and likely delayed nesting activity. In Alaska, production appears to be average to above average. Overall, production is expected to be near average.

Light Geese:

The term light geese includes snow (blue and white color phase) and Ross's geese. The Mid-Continent Population (MCP) of light geese includes breeding colonies on Baffin and Southampton Island and along the west coast of Hudson Bay. This population is the primary source of lesser snow geese present in Missouri during fall through winter. However, light geese from throughout the arctic are present especially during spring migration.

Although lesser snow geese are more common, increasing numbers of Ross's geese have been noted in Missouri and the Mississippi Flyway in recent years. This appears to be due to higher numbers of Ross's geese throughout their range and their expansion into the eastern arctic.

Figure 6. Midwinter survey estimates of the Mid-Continent Population of light geese: 1969-2009.



After peaking at nearly 3 million in 1998, numbers of the MCP light geese have been variable, but generally stable (Figure 6). The 2010 Midwinter Waterfowl Survey resulted in an estimate of 2.66 million MCP light geese, which is similar to the 2009 estimate of 2.75 million. This year, reports indicate early nesting of snow geese at South Hampton Island and conditions were likely similar at Baffin Island. Nesting may have been somewhat delayed along the west coast of Hudson Bay. Spring arrived early at La Perouse Bay near Churchill, Manitoba. Overall, production is expected to be good for MCP light geese. Snow geese that nest further to the west in the arctic and winter in the Central Flyway will likely have lower production than average as a result of the fourth consecutive delayed spring.

2010-11 FEDERAL DUCK SEASON FRAMEWORKS

Broad frameworks of waterfowl hunting dates, season lengths, and bag limits are developed by the U.S. Fish and Wildlife Service in cooperation with states from each of the four flyways – Atlantic, Mississippi (including Missouri), Central, and Pacific. A series of technical meetings, administrative review, and public comment are documented in the Federal Register and provide a forum for biological and social considerations. The result of this regulations process is a general waterfowl season framework within which states select specific season dates. All states within each flyway share a common framework of season length and bag limits. Missouri's basic season structure is the same as the 14 Mississippi Flyway states from Minnesota in the North to Louisiana in the South. States can recommend a season more restrictive but no more liberal than the federal framework.

Adaptive Harvest Management:

AHM is a process first implemented in 1995, that provides a framework for making harvest regulation decisions with incomplete knowledge of mallard population dynamics (e.g., response to harvest and habitat) and the role of certain environmental variables (e.g., wetland conditions). Development of regulations under AHM requires agreeing on a harvest management objective and a limited number of regulations options (currently 3 packages), and formulating specific models of relationships between harvest and populations (Table 1).

A continuing challenge for AHM is to incorporate other species into the AHM decision-making process. Presently, the AHM protocol is based solely upon the status of mid-continent mallards. Harvest regulations for other species below management objective levels occur through other provisions, such as limiting the number of days within the overall season framework.

For the 14th consecutive year, in 2010, the AHM model calls for a 60-day season with a 6-duck daily bag limit. For more specific information about Adaptive Harvest Management refer to the U.S. Fish and Wildlife Service website at: <http://www.fws.gov/migratorybirds/>. The framework dates for the Mississippi Flyway are from the Saturday nearest September 24 through the last Sunday in January during liberal and moderate seasons and from the Saturday nearest October 1 through the Sunday closest to January 20 during a restrictive season.

Table 1. Duck season options in the Mississippi Flyway.

Regulation	Restrictive	Moderate	Liberal
Season Length	30 days	45 days	60 days
Duck Bag Limit	3 ducks	6 ducks	6 ducks
Mallard Bag Limit (females)	2 (1)	4 (1)	4 (2)

* A closed season is an option each year.

Canvasbacks:

Canvasbacks are among the least abundant of the “major” duck species. Because of their historically low numbers, canvasback regulations have been conservative. The harvest management strategy is to maintain a spring breeding population of at least 500,000

canvasbacks. The spring 2010 population estimate of 585,200 will support an open season and is predicted to achieve a spring breeding population of 500,000 in 2011. Therefore, a canvasback daily bag limit of one will be allowed during the fall 2010 season.

Pintails: Prior to 2010, the USFWS employed a prescribed pintail harvest management strategy with several thresholds that would result in changes to season length and bag limit size. If the population was below 1.5 million and the projected fall flight was less than 2.0 million, the pintail season would be closed. The Mississippi Flyway would have a “season within a season” when the breeding population was below 2.5 million and a decline in the following year’s breeding population was predicted. Additional thresholds were included that would trigger a 1, 2, or 3 bird bag limit. This year marks the first year of using a derived harvest strategy for pintail. This strategy specifies an objective, a set of alternative regulatory options, predictive models for pintail population dynamics, and determines annual regulatory choices based on a formal optimization process. All four flyways endorsed an objective of maximizing long-term cumulative harvest, including a closed-season constraint of 1.75 million birds, and eliminating the options for a 3-bird bag or a season within a season. These changes will minimize the potential for closed seasons, eliminate the potential for shorter pintail seasons within the general duck season, maximize the frequency of seasons with greater than a 1-bird daily bag limit, and minimize large changes in regulations. Applying the new strategy to this year’s overflight-bias-corrected breeding estimate of 4.30 million pintails resulted in the optimal regulatory choice of the “liberal” alternative with a 2-bird daily bag limit.

Scaup:

The 2010 population estimate of 4.24 million scaup was similar to the 2009 estimate of 4.17 million scaup. According to the U.S. Fish and Wildlife Service Scaup Harvest Strategy, a moderate scaup season will be offered during 2010. The moderate package allows for a 2-bird bag for the entire season. Regardless, concern for the status of scaup remains as the 2010 population estimate is still 16% below the long-term average.

Wood Ducks:

A recent analysis of wood duck population trends, harvest estimates, and band recovery information suggested that an additional wood duck in the daily bag would be compatible with the current status of wood ducks. Therefore, an experiment was initiated during the 2008 season to test the impact of increasing the wood duck bag limit from two to three. The Mississippi, Atlantic, and Central Flyway Councils will continue to monitor and evaluate the impact of an additional wood duck in the daily bag. Thus far, harvest rates have been variable among years and this year’s harvest rate was actually lower than during some years with a two-bird bag limit.

RATIONALE FOR MISSOURI WATERFOWL SEASON TIMING

In Missouri, hunting prospects are determined by (in order of importance) 1) wetland habitat conditions, 2) weather, 3) migration timing, and lastly 4) size of the fall flight. Unfortunately, the most important variables are the least predictable. Recommending the specific waterfowl seasons for Missouri involves hitting a “moving target” of migrations, weather, habitat conditions, and hunters’ preferences. Undoubtedly, these variables again will play important roles in determining when and where waterfowling opportunities will occur in 2010-11. Sixty-day seasons for ducks in recent years have provided much more flexibility in season setting because a wide range of migrations and weather can be included within a 2-month season. Additionally, three zones allow for a season tailored to the diverse hunting styles from north to south Missouri. The federal framework only allows zone boundaries to be changed every five years; the next opportunity will be after the 2010 season.

Duck Season Data for Missouri:

Considerable information is utilized each year to make duck season date recommendations for Missouri. Long-term trends of weather, migrations, and populations are the basis for duck season timing. **Weather** data, from selected weather reporting stations, include the temperature and precipitation affecting hunting conditions during September to January. **Migrations** of ducks have been reported on Missouri Department of Conservation wetland areas since 1948. Information about early-migrant dabbling ducks (teal, wigeon, pintails, etc.) and mallards are considered when seasons are recommended. **Population** data from Department Areas also are considered. These data, for both mallards and early-migrant dabblers, are the result of at least biweekly surveys conducted on each area since 1970. **Mallard band recovery** data provide a primary basis for information on the distribution of mallard harvest by location and date. Mallards are used because of their importance to Missouri hunters, annually accounting for 50%-70% of the statewide harvest. **Harvest** information from the U.S. Fish and Wildlife Service’s and the Missouri Department of Conservation’s post-season harvest surveys provide a means to consider harvest levels for groups of years with similar zone/split season configurations.

HUNTERS' VIEWS ABOUT DUCK SEASON DATES

After each of the last 14 seasons, we have included a survey question asking hunters to indicate the week they most preferred to hunt ducks in the county they hunted most. The predominant theme after mild seasons during 1997-1999 was for later duck seasons. By 1999, hunter preferences were nearly 2 weeks later than in 1996. After an early freeze-up in 2000, hunters once again indicated earlier season preferences. From 2001-2009, hunter season date preferences have remained relatively stable.

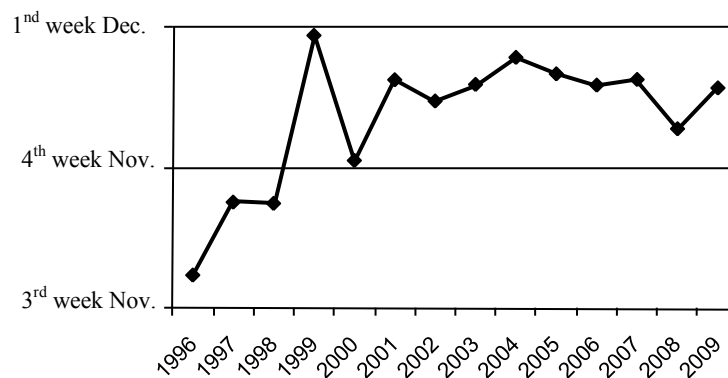
Based on hunters' desires for later seasons, Missouri moved the opening date back about one week in each zone beginning in 2004. Since then, the duck season has opened on the last Saturday in October in the North Zone, the first Saturday in November in the Middle Zone, and on Thanksgiving or the Friday thereafter in the South Zone. This season structure provides a potential range of opening

dates from October 25 through October 31 in the North Zone, from November 1 through November 7 in the Middle Zone, and from November 22 through November 28 in the South Zone.

Maintaining opening dates associated with specific weeks of the month allows the timing of duck season to vary by seven days

within a six-year period and accommodates those with earlier or later preferences over this period of time.

Figure 1. Statewide week preferred to hunt ducks, 1996-2009



All hunter preferences are legitimate; however, varied attitudes about the “best” season are not necessarily shared by all hunters even in a local area. Species preferences (mallards vs. other dabblers), habitat types (shallow, managed sites vs. reservoirs and rivers), and weather conditions (mild vs. severe) are just some of the factors that contribute to differences in views about preferred season timing. As a result, waterfowl season dates always are points of contention.

Figure 2. North Zone – Week preferred to hunt ducks, 2004-2008 average & 2009.

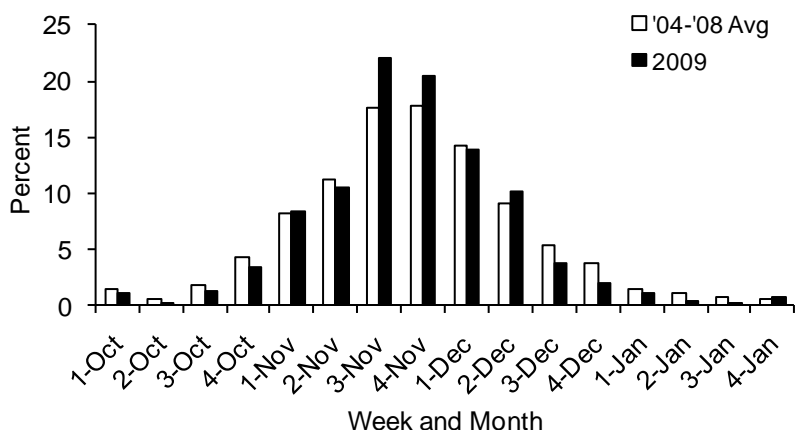


Figure 3. Middle Zone – Week preferred to hunt ducks, 2004-2008 average & 2009.

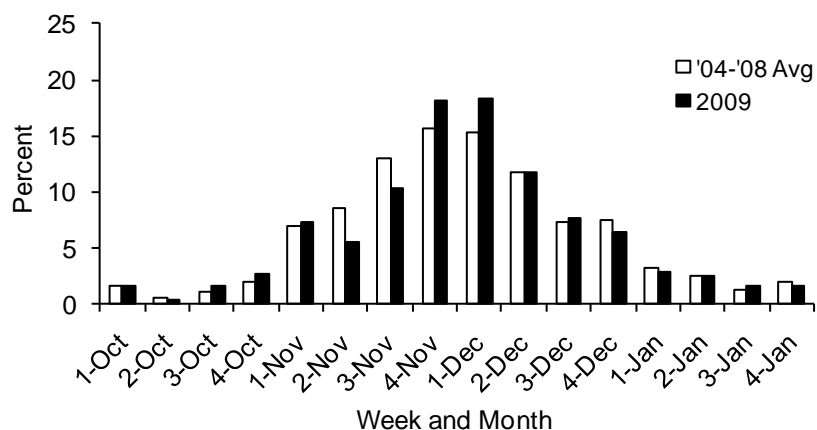
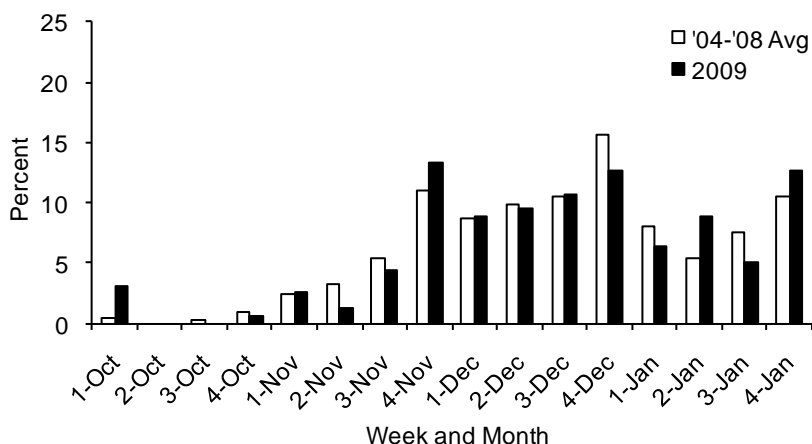


Figure 4. South Zone – Week preferred to hunt ducks, 2004-2008 average & 2009.



After the 2009 season, 61% of North Zone hunters indicated their preferred week to hunt was in November, which was up from 55% in 2008 and higher than any of the previous five years (range: 53%-58%, Figure 2). Compared to other zones, hunters are in more agreement about their preferred week to hunt with 43% indicating they most prefer to hunt ducks during the third or fourth week of November. Only 7% indicated that their preferred week to hunt was earlier or later than the dates offered the previous year.

The most desired weeks to hunt in the Middle Zone were about a week later than in the North Zone, with 36% of Middle Zone hunters preferring to hunt the last week of November or the

first week of December (Figure 3). Just over 6% of Middle Zone hunters indicated their preferred week to hunt was earlier than what was offered in 2008, while just over 8% indicated later season preferences.

South Zone hunters had the most disparate preferences with 22% of them preferring to hunt in November, 42% in December, and 33% in January (Figure 4).

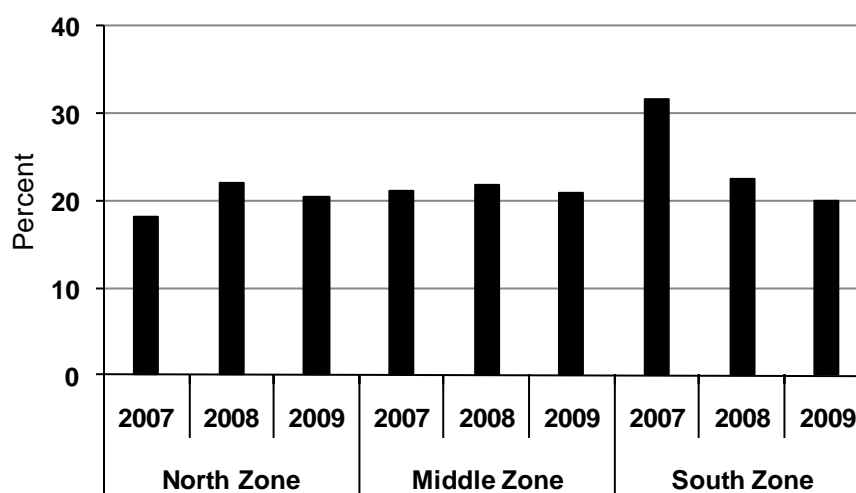
Nearly 25% of South Zone duck hunters

preferred either an earlier

or later season than what was provided in 2009-10 with nearly an equal percentage preferring earlier versus later seasons. The most significant tradeoff with season dates in the South Zone is whether to open the season over the Thanksgiving holiday, one of the most popular times to hunt, and as a result have it closed during the last week of January, or to open the season the week after Thanksgiving so it can run as late as the federal frameworks allow. In 2010, the two most popular weeks were Thanksgiving week and the last week of January. Thirteen percent of South Zone hunters indicated the last week in November was their favorite week to hunt and 13% indicated the last week of January would be their favorite week to hunt.

Duck hunters have responded favorably to the changes in season structure first implemented in 2004. During the past four years, the percentage of duck hunters dissatisfied with season dates has ranged from 18% to 22% in the North Zone and from 20% to 22% in the Middle Zone (Figure 5). The percentage of hunters dissatisfied with season dates in the South Zone rose from 17% after the 2005 season to 32% after the 2007 season and then declined to 20% after the 2009 season. The change in percentage of hunters dissatisfied with season dates may relate to the timing of Thanksgiving. In 2007, the year with the most dissatisfied hunters, Thanksgiving fell on November 22, the earliest possible. In 2008 and 2009, Thanksgiving occurred on November 27 and November 26, respectively.

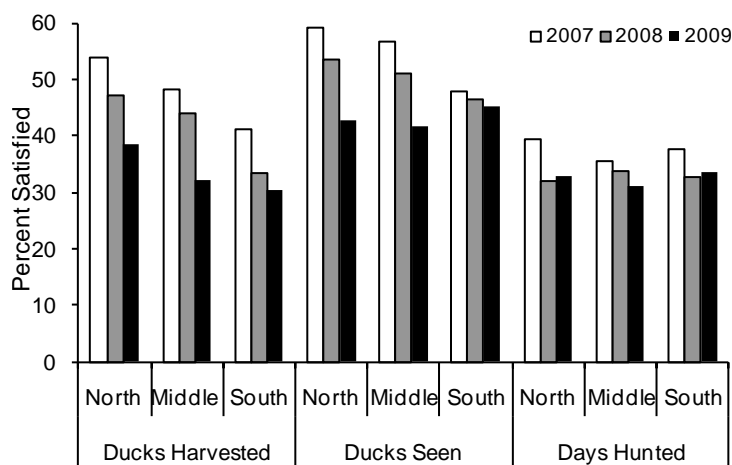
Figure 5. Percent hunters dissatisfied with season dates, 2007-2009.



Measures of Hunter Satisfaction:

Each year we ask hunters how satisfied they were with the number of ducks they saw and harvested, as well as how satisfied they were with the number of days they hunted (Figure 6). On-going monitoring of hunter satisfaction suggests that hunter expectations are high. To illustrate, in 2006 and 2007, years with record harvests and 60-day seasons, less than 60% of hunters indicated they

Figure 6. Hunter satisfaction by zone, 2007-2009.



were satisfied with the number of ducks they harvested or the number of ducks they observed. In 2009, satisfaction with harvest was the lowest it has been since we began tracking it in 2002. Only thirty eight percent of North Zone hunters, 32% of Middle Zone hunters, and 30% of South Zone hunters indicated they were satisfied with the number of ducks they harvested. Low levels of satisfaction with harvest corresponded to the lower harvest in Missouri. While more hunters were satisfied with the numbers of ducks they saw compared to the numbers they harvested, satisfaction with ducks seen was still lower than during the previous two years. Just over 30% of duck hunters were satisfied with the number of days they hunted. These low levels of satisfaction were likely related to above average number of days where most shallow water was frozen thus limiting hunting opportunities.

OUTLOOK FOR THE 2010 MISSOURI SEASON

The preseason outlook is similar to last year with reports of above average duck numbers and above average production. After last season did not live up to many hunters' expectations, it should remind them that local habitat conditions, weather, and migration timing all can play a major role in shaping a season's outcome. This year, extensive spring and summer flooding has limited crop production on most Department Wetland Areas and likely will affect yields in lower lying areas (Appendix E and Appendix F). Abundant rain should result in good moist soil seed production; however, areas that flooded later in the summer will likely have somewhat lower seed production. Most wetland managers on Department Wetland Areas are reporting fair to good moist soil production. Additional water on the landscape through spring and summer may result in good moist-soil seed production and waterfowl habitat in nontraditional areas. In addition, areas with saturated soils and a high water table may require less rain to flood this fall.

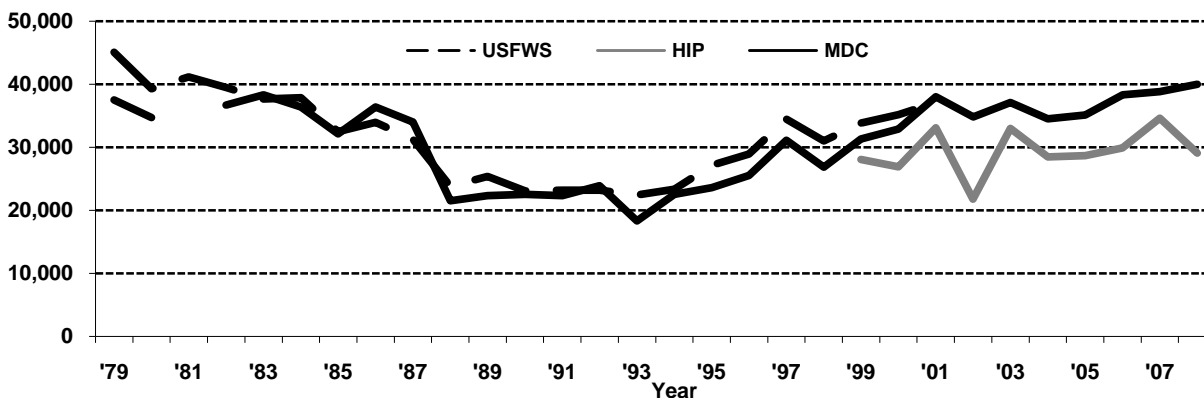
Average production of EPP Canada geese and above average production of Minnesota, Manitoba, and Iowa giant Canada goose populations should provide a high proportion of young geese in migrant populations. Snow and ice cover in states north of Missouri will determine to a large extent the degree to which those Canada geese will arrive in Missouri. Hunters should expect a higher proportion of young birds in the light goose population and average numbers of young in the white-fronted goose population.

Hunters will once again have the opportunity to take advantage of a 16-day teal season, a 60-day duck season, late season Canada goose hunting, and the light goose Conservation Order. Duck season dates that are later than usual due to the timing of the last weekend of October and first weekend of November will favor hunters with late season preferences. However, a 60-day season should still accommodate most hunter season preferences and provide hunters with a variety of hunting opportunities during the upcoming waterfowl season.

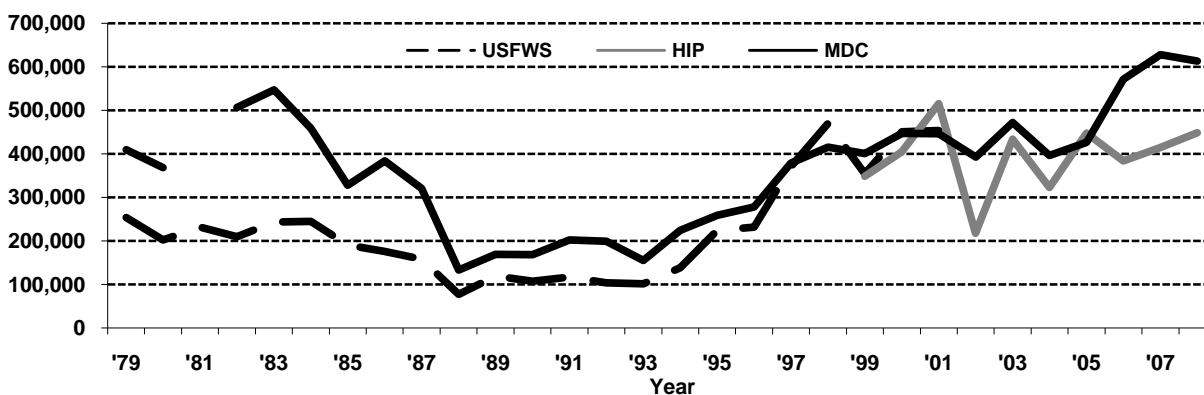
APPENDICES

Appendix A. Comparison of hunter and harvest estimates.

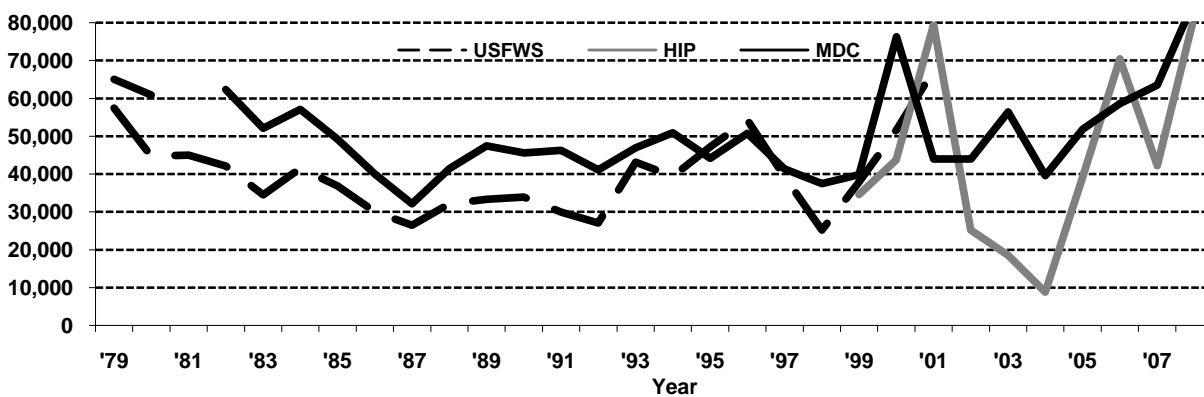
Missouri waterfowl hunter numbers: 1979-2008 USFWS active waterfowl hunters, HIP estimate of duck hunters, and MDC estimate of duck hunters.



Missouri duck harvest estimates: 1979-2008 from USFWS, HIP, and MDC surveys.



Missouri Canada goose harvest estimates: 1979-2008 from USFWS, HIP, and MDC surveys.



Appendix B. Mean mallard harvest/day by 5-day periods among years of similar zoning structure, 1973-2008 (top two weeks shaded).

	October			November						December						January				
	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5
Mallards																				
1973-76			3915	3707	4166	3560	2202	2853	2848	1875	2471	2137	2813		1873	712				
1977-79			1699	2402	3188	3856	3810	3562	2260	2391	1412	679	625	100	166					
1980-82	1715			3472	2750	2100	2412	2552	2228	1705	1520	2254			518		143			
1983-85	913	1151		3628	2873	2421	2055	3331	2683	2339	1521	1379	461	343	461	319				
1986-90				3814	2447	1532	1877	1856	2008	1512	1946	317			146	56	130	0		
1991-94			1382	1437	2277	1675	1520	1541	1844	1085	530	174	100	108	94	215				
1995			1717	5492	3001	2012	2146	1956	2462	1256	2104	873	1339	278	277	330	0			
1996			1438	2286	1705	1783	2116	2291	2316	3807	1187	740	781	521	261	600	541	971		
1997		1313	1077	1536	2834	4323	2884	2013	2372	2942	2476	2915	2927	1358	1315	0	926	2157		
1998		1528	812	451	1862	5378	3623	3519	3658	1723	3347	1438	1391	613	911	406	584			
1999		962	532	2046	1337	648	1295	2779	2299	4444	4493	5496	5141	1699	1847	859	1115	513		
2000			1004	2912	5801	6707	6160	6440	4903	2545	2207	2344	1252	990	352	338	1429	1447		
2001			1898	1827	2850	1699	2918	5939	9313	4772	4357	5009	6091	6575	1556	424	236	1175	507	
2002 *			659	3060	1204	1304	1341	2682	3439	3576	1994	1616	1547	1582	802	344	344	34	0	516
2003 *		115	1262	6215	7080	2871	2911	4838	4209	2868	3404	2103	5124	3174	2868	118	197	197	669	
2004*			1061	733	2431	3549	1312	2894	4012	2353	3164	4475	2855	849	1865	2276	617	154	386	289
2005*			3849	3985	5103	4842	5326	2458	3464	3985	3166	1304	1527	968	1192	521	261	186	112	372
2006*			1300	3884	2202	3945	3853	3303	4496	2844	3609	3395	4098	2936	2141	765	0	398	550	994
2007*			1502	2340	3877	3423	2969	4820	5029	6287	3388	3353	1467	3528	1892	733		35	35	
2008*		3129	2148	2761	5191	5449	4970	5118	5964	3682	3314	2135	1289	1362	2178	368	147	331	258	74

*preliminary

Appendix C. Mean total duck harvest/day by 5-day periods among years of similar zoning structure, 1973-2008 (top two weeks shaded).

	October			November						December						January				
	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5
Total Ducks																				
1973-76			11918	8037	6529	5348	3204	3839	3448	2334	3269	2588	3203		2202	712				
1977-79			6068	5683	5990	6111	5874	5486	3177	3628	1903	804	798	167	249					
1980-82	8049			7630	4836	3334	3441	4107	2989	2309	2001	2541			609		175			
1983-85	5609	8500		9604	5826	3948	3628	4529	3716	3089	2080	1637	592	619	834	319				
1986-90				8157	4734	2709	2941	2985	2415	2175	2710	492			191	129	155	0		
1991-94			3673	3596	4487	3213	2455	2330	2661	1477	829	268	124	130	183	441				
1995			5761	11516	5070	3924	3072	3720	3709	1582	2856	1068	1634	660	436	361	0			
1996			5317	6968	4648	3958	4442	3616	3850	4466	1737	1317	1479	667	261	820	923	1618		
1997		7661	4256	6064	8475	11054	6899	3814	4618	4418	4330	4305	3390	2097	2348	91	1117	2613		
1998		10355	7650	4168	7139	13601	9296	7684	6695	3336	5687	2532	3599	1751	4032	1103	1029			
1999		5763	3583	3965	3709	1948	3012	4874	4264	7144	7386	8267	7609	3104	2690	1010	2150	513		
2000			4172	10593	12508	11078	10510	11898	6935	4696	3948	3284	1518	1677	668	395	1992	2183		
2001			4426	6424	5120	3644	4105	9393	12632	6142	5784	7357	7553	8538	3460	1546	444	1998	972	
2002*			3152	8459	2888	2407	1926	3851	4711	4573	2957	1857	1788	1891	1003	378	378	34	0	516
2003*		6293	1409	14003	13610	5467	5546	8221	7237	4209	4523	3540	7001	4602	3180	275	236	511	747	
2004*			5980	3935	8758	7408	2238	5131	5787	3357	4012	5942	3974	1466	3344	3164	1003	231	617	1109
2005*			4283	4842	7189	9498	12068	6406	9349	10317	6742	4470	4730	2384	4768	1788	819	372	372	807
2006*			5467	8869	4649	6422	6239	5199	7065	4832	5933	4924	6178	4006	3517	1223	0	550	1040	2141
2007*			6077	7684	7195	6112	4506	10059	7649	8836	4715	5204	3178	4890	2619	1222	175	70	70	
2008*		11966	5461	8505	11266	9793	7621	7621	8284	5633	5854	3645	2172	2062	2884	589	295	552	147	

*preliminary

Appendix D. Mean wood duck harvest/day by 5-day periods among years of similar zoning structure, 1973-2008 (top two weeks shaded).

	October			November						December						January				
	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5
Wood Ducks																				
1973-76			2320	1039	419	366	58	134	29	0	53	0	0		0	0				
1977-79			1342	761	279	371	161	137	10	81	29	0	0	0	0					
1980-82	2567			1246	891	403	202	152	50	65	64	0			0		0			
1983-85	2299	2593		1288	359	261	129	206	74	84	44	11	0	0	0	0				
1986-90				1178	455	174	127	129	93	56	0	0			0	0	0	0		
1991-94			954	662	500	318	165	138	95	42	40	1	0	0	7	0				
1995			1468	589	290	448	222	316	98	66	0	0	0	0	0	0	0			
1996			871	411	468	203	261	171	129	0	102	324	37	0	0	0	0	0		
1997		3054	398	615	301	361	29	76	59	0	0	0	76	76	0	0	0	0		
1998		2411	1380	902	1295	1383	287	518	116	56	50	0	231	65	108	0	0			
1999		2703	1236	683	536	494	571	0	176	103	494	150	77	0	0	0	26	0		
2000			729	1316	445	228	148	57	42	0	161	0	0	57	0	0	113	0		
2001			414	872	253	166	0	167	197	114	121	42	129	0	139	0	0	0		
2002*			229	550	103	69	34	103	172	34	0	0	0	0	0	0	0	0		
2003*		1377	328	983	944	590	393	157	0	118	157	0	39	0	0	0	0	0	39	
2004*			386	424	1196	231	231	347	154	347	77	77	0	0	129	77	39	39	39	96
2005*			931	670	1229	708	708	186	186	372	112	0	74	37	74	74	0	74	0	0
2006*			229	489	183	153	153	31	31	306	275	153	0	153	178	31	0	0	61	0
2007*			524	733	419	349	70	175	175	70	140	0	0	70	0	35	0	0	0	
2008*		1105	215	1178	147	442	110	110	37	74	110	0	0	37	61	0	0	0	0	

*preliminary

Appendix E. 2009 Status of Missouri managed wetland areas (August 11, 2009).

AREA	REPAIRS AND CONSTRUCTION	HABITAT/FOOD STATUS			Water Management	HUNTING PARTIES PER DAY	
		Moist-Soil	Timber	Floodable Crops		Blind	Walk-in
Nodaway Valley	None	Good	NA	Good	Pumping dependent on adequate river levels.	4 blinds, (1 disabled)	15 plus 150 acre open area
Bob Brown	None	Good	NA	Good	Normal	1 disabled	19-20
Fountain Grove	Phase II Wetland Renovation Project; portions of area may be closed	Fair to Good	Good	Fair to Good	East side of area should be normal; west side dependent on progress of renovation project Anticipate hunting Pools 2 and 3 during 2009-10 season.	21 depending on project progress; H & J pools will be opportunistic	4-8 (dry fall) 4-12 (wet fall)
Swan Lake	None	Good/Excellent	Good	Good	Goose hunting on Wednesdays, Friday-Saturday, & legal holidays. S, T, V, & W Lanes - 1:00 P.M. close	3	15
Grand Pass	One pump down	Good	NA	Good	Normal, if pump is replaced in time.	1 disabled	20-45
Eagle Bluffs	Repairing 1 pump	Excellent	NA	Good	A delayed harvest could impact beginning of season.	2 disabled	14-17
Ted Shanks	4 water control structures & 10 blinds	Excellent	Poor	Good	Normal	10(1 disabled)	20-32
B.K. Leach	Levee repairs. New pump station const - early August.	Excellent	NA	Poor	Water supply will be limited on River Slough Tract until completion of pump station. Blind hunting after completion of new pump construction.	5 (1 disabled)	8-16
Marais Temps Clair	None	Good	NA	Fair	Normal	1 disabled	6-9
Columbia Bottom	None	Good	NA	Good	Normal	1 disabled	6-10
Schell-Osage	Levee, blind, & water structure repair.	Good	Good	None	All pools will be at full pool.	20 (2 disabled)	12
Montrose	All management units under renovation	poor	NA	none	Lake currently at full pool. Management units probably not flooded because of renovation	11	0
Settles' Ford	None	Good	NA	Good	6 of 14 pools with water. Additional rainfall is needed to fill remaining pools.	1 disabled	Open Hunting
Four Rivers	None	Good	NA	Fair	Unit 1 and unit 2 – Normal Units 3 & 4 are dependent on rain and river rise	1 disabled	20-24 plus open areas
Duck Creek	Ditch clean out/road work along Ditch 1 and Pools 1, 2, and 3	Good	Good	Fair	Delayed flooding in Pools 8. Pools 2 & 3 renovation work. Unit A - Normal	40 blinds (2 disabled) 4 goose pits	5 plus Pool 8 (5- 40 individuals)
Otter Slough	None	Good	NA	Fair	Normal	12 (1 disabled)	17-20
Ten-Mile Pond	Ditch work in and F and G3.	Excellent	NA	Good	Normal - Depending on river conditions.	0	7-18
Coon Island	None	Fair	Good	None	Ice storm damaged timber.	0	Open Hunting
Little River	Levees	Poor	NA	None	Levees & electric service under repair from ice storm	0	4

***Wetland status will be updated in late September.**

2010 Status of Missouri Managed Wetland Areas (October 20, 2010)

AREA	REPAIRS AND CONSTRUCTION	HABITAT/FOOD STATUS			Water Management	HUNTING PARTIES PER DAY	
		Moist-Soil	Timber	Floodable Crops		Blind	Walk-in
Nodaway Valley	None	Good	NA	Good	Normal	4 (1 ADA)	13-15 plus 150 acre open area
Bob Brown	None	Good	NA	Good	Normal	1 ADA	12-19
Fountain Grove	Construction stopped for the season	Fair	Good	Poor	Frequent flooding has provided lots of water but has reduced food production.	18 1 ADA	4-8 (dry fall) 16-18 (wet fall)
Swan Lake	None	Good	Good	None	Normal Check Website for Updates about Hunting	1 ADA	--
Grand Pass	None	Good/Exc	NA	Fair	Normal	1 ADA	15-40
Eagle Bluffs	None	Good	NA	Fair/Good	Normal	2 ADA	14-17
Upper Mississippi	None	Poor	Poor	NA	NA	88	Opportunistic
Ted Shanks	None	Fair	Poor	Poor	High river levels have kept water on portions of the area all summer resulting in poor food conditions. Water mgmt this fall should be normal in W&S pools.	4 (1 ADA)	20-32
B.K. Leach	None	Good/Exc	NA	Poor/Fair	High river levels contributed to poor food conditions in River Slough	5 (1 ADA)	8-16
Marais Temps Clair	None	Poor	NA	Fair	Normal/limited open water and food	1 ADA	6-9
Columbia Bottom	None	Fair	NA	Poor	Normal	1 ADA	6-10
Montrose	Major levee and structure repairs	poor	NA	None	Normal-- Lake currently 2"low	12	0
Settles' Ford	None	Good/Exc	NA	Poor	11 of 14 pools with water	1 ADA	Open Hunting
Schell-Osage	G &H pools repair/renovation	Very Poor	NA	None	G & H Pools dry to start season, all other pools near full pool.	17 (2 ADA)	12 Parties 2 Field Opportunities
Four Rivers	None	Unit 1,2,3 - Good U4 -Poor	NA	Fair	Unit 1- normal; Unit 2 – normal; Unit 3 – 70% full; Unit 4 – full pool	1 ADA	20-24 plus open areas
Duck Creek	Major construction will limit access and flooding capability	Good	Fair	Poor	Due to construction, Pools 2, 3 & 8 will depend on local rain events; expect delayed flooding in timber Unit A - Normal	24 (1 ADA) 4 goose pits	6 plus Pool 8 (5- 40 individuals)
Otter Slough	None	Good	NA	Fair/Poor	Extremely dry; potential delays in adding water.	12 (1 ADA)	17-20
Ten-Mile Pond	G3, F, and C and levee work in G3 Potential ditch work in and F.	Good	NA	Good	Extremely dry, which could result in delayed pumping.	0	7-18
Coon Island	None	Good	Fair	Fair/Poor	Extremely dry; potential delays in adding water. – The area is subject to frequent flooding. Contact the Otter Slough office for information.	0	Open Hunting
Little River	None	Poor	NA	Failed	Extremely dry; potential delays in adding water.	0	4

2010 Teal season - Status of Missouri wetland areas (September 7, 2010).

Conservation Area	Drawing	Repairs & Construction	Habitat/Food Status	Teal Season*	
			Moist-Soil	Acres Flooded/ Wetland Status	No. Parties
Nodaway Valley	No	None	Good	75 in hunting pools, 25 in teal refuge	No Limit
Bob Brown	No	None	Good	100	No Limit
Fountain Grove	No	Major Construction in H and J pools. Pump system under repair	Fair	Area is currently dry. Will begin adding water once pump is repaired. Check answering machine for updates.	No Limit
Grand Pass	No	None	Good	75-100	No Limit
Eagle Bluffs	No	Office under construction so no draw facility	Good	~150	No Limit
Ted Shanks	No	Hwy 79 is closed Minor water control structures repairs	Fair	1700	No limit
B.K. Leach	No	None	Good	~200	No limit
Marais Temp Clair	No	None	Poor	400/limited open water	No limit
Columbia Bottom	No	Pool 1 levee needs repair	Fair	50-100	No limit
Schell-Osage	No	Minor levee repairs	Fair	Only Barber and Schell lakes are huntable, Atkinson Lake is teal refuge.	No limit
Montrose	No	Major levee repairs to all pools	Poor	Lake area	No limit
Settles Ford	No	None	Good	385	No limit
Four Rivers	No	No	Excellent	Unit 1 - 25; U2 - 40 U3 - 400; U4 -500	No Limit
Duck Creek	No	Major Construction	Good	Pool 1: 500-700 Unit A: 0-25	No Limit 1 party / unit
Otter Slough	Yes	Minor	Good	500	13-18
Coon Island	No	None	Fair	60	No limit
Ten-Mile Pond	No		Good	<200	No limit
Little River	No	No	Poor	<25	1 party/unit